

**EXHIBIT F**

**The Prentice-Hall  
Standard Glossary  
of  
Computer Terminology**

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## Hardware

**\* Hardware** The computers, peripheral devices, and other devices, including communication channels associated with data processing and data transmission. Hardware may be any type of electronic, magnetic, or mechanical device including electronic circuitry, physical storage media such as magnetic tapes or disks, cables, and literally anything that is not considered software. The term "firmware" is often used to refer to circuits that contain programmed instructions and therefore a combination of hardware and software. Documentation, such as a hard copy of a program, is considered to be software rather than hardware.

**Hardware, Dedicated** See Dedicated Hardware.

**Hardware Check** Synonymous with Automatic Check.

**Hardware Monitor** (\* Hardware) A device that has the job of observing and reporting on the performance of a computer system. Synonymous with Monitor (1).

**Hardware Resource** (\* Hardware) The facilities provided by hardware in the data processing function. Hardware resources include processors, internal storage (memory), input/output (I/O) devices, auxiliary data storage, and other resources that are used in data processing.

**Hard-Wired** (\* Hardware) An adjective applied to computer circuits that are "permanent" in the sense that they are hardware rather than software. A very common example of a hard-wired circuit is read-only memory (ROM). ROM, often called "firmware," is part of the built-in circuitry of a computer. ROM may not be altered, except by changing it through a physical process.

The word "wire" is technically obsolete when referring to integrated circuits (ICs) which dominate the computer industry today. However, tradition dies hard and the term "hard-wired" still is used commonly to refer to integrated circuits in spite of the change in technology. See Firmware.

**Hard-Wired Logic** (\* Program) A program written using hard-wired techniques.

**Hardwire Link** (\* Channel) Wire, either copper twisted-pair wire or coaxial cable, commonly used by the telephone industry to connect two points in a communications system.

**Harris Corp.** Large manufacturer of small computers and communications equipment. Products include minicomputers, private branch exchanges (PBXs), and communications satellite and microwave systems.

## Hashing

- (1) (\* Processing) A technique for converting the values within fields into more "compact" representations of the same values. Usually, the values being converted are keys.

## **Hash Total**

(2) (\* Addressing) An addressing technique used to store and retrieve data in a file. Hashing uses keys in an index to determine the location of the data in the file.

**Hash Total** (\* Processing) A commonly used technique for checking that data was properly entered into a computer system. Preparing a hash total involves adding one or more numeric fields in a group of records. For example, if each record contains a field "employee-number," the values for this field within all of the records are added up manually (by hand). The computer then does exactly the same thing. The totals are compared. If they agree, the records are assumed to have been entered correctly, at least with respect to the field being used for developing the hash total. The total itself is often completely meaningless beyond this checking function, as would be the case with our example, which used employee numbers. See also Crossfoot Check.

**HASP** (\* Operating System) An acronym for Houston Automatic Spooling Processor. HASP is a technique that is widely used on larger model IBM computers to control input and output involving remote devices. The HASP method utilizes mass storage (normally disk units) to temporarily store data being sent between the CPU and its peripheral devices.

**HDLC** Abbreviation for High-Level Data Link Control.

**Head** (\* Input/Output Device) That portion of an input/output device that reads data from or writes data to a storage medium. Two common examples of heads are the electromagnetic device that reads, writes, or erases data on a disk or magnetic tape, and the device that punches holes in paper tape or senses the meanings of such holes when paper tape is being read.

**Head, Combined** See Read/Write Head.

**Head, Magnetic** See Magnetic Head.

**Head, Print** See Print Head.

**Head, Read** See Read Head.

**Head, Read/Write** See Read/Write Head.

**Head Crash** (Read/Write Head) A situation in which the read/write head in a disk unit or other direct access storage device accidentally comes in contact with the surface of the storage medium, usually causing hardware damage and loss of data. A head crash can be caused by hardware malfunction or some external reason such as foreign objects getting into the very narrow space between the read/write head and the surface of the storage medium.